

IN THE CLAIMS:

1 1 (Previously Presented). A large bandwidth add-drop filter for a planar waveguide
2 device comprising:
3 an input coupling structure receiving an input signal; and
4 an output coupling structure providing an output signal; and
5 at least two waveguides connected to said input and output coupling structures, said at
6 least two waveguides having a superstructure and superperiod photonic band-gap grating,
7 including variations of grating amplitude and grating phase and grating periodicity, wherein
8 said photonic band-gap grating covers the spectral range of optical frequencies added or
9 dropped by said filter, wherein said filter provides at least one pole and at least one zero at a
10 frequency within said spectral range.

1 2. (Currently Amended) An add-drop filter as claimed in claim 1, wherein ~~the~~ said
2 photonic band-gap covers at least 8 optical channels.

1 3. (Cancelled)

1 4. (Currently Amended) An add-drop filter as claimed in claim 1, wherein ~~the~~ said
2 grating ~~{waveguides have}~~ has a sampled ~~{grating}~~ strength profile.

1 5. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one
2 ~~{coupler}~~ said coupling structure comprises a directional coupler.

1 6. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one
2 ~~{coupler}~~ said coupling structure comprises multi-mode interference waveguides.

1 7. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one
2 ~~{coupler}~~ said coupling structure comprises diffracting slab waveguides.

1 8. (Currently Amended) An add-drop filter as claimed in claim 1, wherein at least one
2 ~~{coupler}~~ said coupling structure comprises diffracting slab waveguides.

1 9. (Currently Amended) An add-drop filter as claimed in claim 1, ~~{further comprising~~
2 ~~two couplers, in which a first coupler}~~ wherein said input coupling structure provides an input
3 port and a drop port and ~~{a second coupler}~~ said output coupling structure provides an add port
4 and a transmission port.

1 10 (Previously Presented). An add-drop filter as claimed in claim 1, wherein said
2 superstructure provides spectrally periodic transmission bands aligned with optical channels.

1 11. (Previously Presented) An add-drop filter as claimed in claim 1, wherein said
2 superstructure has one or multiple superperiods.

1 12. (Currently Amended) An add-drop filter as claimed in claim 1, wherein [the] said
2 grating ~~{waveguides have}~~ has a sampled {grating} strength {profiles} profile providing a
3 window transmission function, covering a band of optical channels.

1 13. (Currently Amended) An add-drop filter as claimed in claim 1, wherein ~~the~~ said
2 grating ~~waveguides have~~ has a sampled ~~grating~~ strength ~~profiles~~ profile providing two or
3 more window functions, each covering bands of optical channels.

1 14. (Currently Amended) An add-drop filter as claimed in claim 1 further comprising a
2 grating tuner for changing a group velocity of one or more ~~of the grating~~ said waveguides.

1 15. (Currently Amended) An add-drop filter as claimed in claim 14, wherein ~~the~~ said
2 grating tuner heats at least one ~~of the grating waveguides~~ said waveguide.

1 16. (Cancelled)

1 17. (Cancelled)

1 18. (Currently Amended) An add-drop filter as claimed in claim 1, wherein one or
2 more ~~grating arms~~ said waveguide comprises a delay-line ~~waveguides~~.